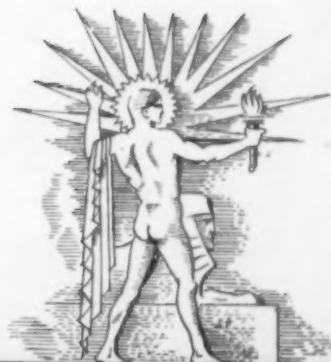


JUN 26 1932

# SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE •



JUNE 25, 1932

In Vulcan's Smithy: 1932

See Page 400

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SCIENCE SERVICE PUBLICATION

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## SCIENCE SERVICE

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Edited by WATSON DAVIS

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## DO YOU KNOW THAT

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A singsing is a kind of African antelope.

Samples of permanent record paper recently submitted by manufacturers to the Bureau of Standards for test were pronounced of such good quality that they should endure indefinitely if stored under favorable conditions.

Animals are much more sensitive to electric shock than human beings, 20 volts being dangerous to cattle and horses.

A new experiment in transportation is a ferry boat that runs on a trolley wire.

A Chinese emperor of the second century B. C. made iron a state monopoly, and the casting of iron utensils secretly was severely punished.

Michigan's nickname is the Wolverine State, yet there are no authentic records to show that this animal ever lived in Michigan.

The reddish egret, once thought to be almost extinct as a breeding species in this country, is now flourishing on Green Island, off the Texas coast.

A natural arboretum, containing 42 kinds of native trees in a radius of 200 yards, was discovered last year in Makau Valley, Oahu, Hawaii.

Before the compensating balance wheel for watches was invented in 1766 a watch gained or lost if subjected to even one degree temperature change.

Dry flies made of cellophane are said to be almost irresistible to trout.

A new style baby carriage hood is of glass that lets ultraviolet rays through and keeps the infra-red rays out.

On many poultry farms, hens are now kept in apartment hen-houses two to six stories high, in which several thousand hens may be confined.

## WITH THE SCIENCES THIS WEEK

**CURIOSITY-AROUSING** questions are prepared concerning the most interesting and important news in each issue. These questions should be a mental stimulant for the adult reader and a boon to the teacher who uses the Science News Letter to add zest to her classroom instruction.

Book reference in italic type is not the source of information of the article, but a reference for further reading on the subject of the article. Books cited can be supplied by Librarian, Science Service, at publisher's price, prepaid in U. S.

## ANTHROPOLOGY

What problem is offered by the "Minnesota man?" p. 410

## ARCHAEOLOGY

In addition to being the birthplace of Sampson, why is Beth Shemesh famous? p. 404

What are the unusual features of the seven caves found in Texas? p. 399.

What town is now the "oldest in the world?" p. 408.

Why has "Old Chersonesus" not been explored for the past 2000 years? p. 404

## ASTRONOMY

Does the sun change its speed of rotation? p. 404

Why is it now thought that the huge meteor craters in central Australia are not so ancient? p. 401. *Meteor—Charles F. Oliver—Williams and Wilkins, 1925, \$6.*

## BOTANY

Can seeds "get drunk"? p. 405

## DIETETICS

Can pasteurizing milk affect its nutritive value for children? p. 408

## ECONOMIC GEOGRAPHY

How does Russia's second five year plan complicate the situation in the Far East? p. 409. *The Soviet Union Looks Ahead—Living—1929, \$2.50.*

## ECONOMICS

Why has it become necessary for some public utilities to sell gas by the pound? p. 400

## ENGINEERING

How does the effect of an audience standing in a grandstand differ from that of the audience sitting? p. 411. *The Stadium—Myron W. Serby—Amer. Inst. of Steel Constr., 1930, \$1.50.*

How near have engineers come to duplicating natural lightning? p. 400

## MEDICINE

What diseases are you likely to have if you live in the "stimulating" section of the country? p. 402

## MINING

How is a gold mine accumulating a world surplus of poison? p. 405

## ORNITHOLOGY

How can a timid humming bird be trained to eat from a man's mouth? p. 399

## PHYSICS

At what air pressure does Dr. Duvillier duplicate the aurora in the laboratory? p. 401

What is peculiar about five of 250 diamonds examined by Sir Robert Robertson? p. 403

## PUBLIC HEALTH

Do Negroes inherit susceptibility to tuberculosis? p. 409

## RADIO

What is a mechanical method of injecting "personality" into a speaker's voice? p. 400. *The Radio Handbook—J. A. Moyer and J. F. Wostrel—McGraw-Hill, 1931, \$5.*

## ZOOLOGY

What animal has been rediscovered? p. 404

## ARCHAEOLOGY

# Child Burial in Each of Seven Newly Found Texas Caves

Examination Reveals Confusing Picture of Indian Life Both Like and Unlike Other American Cultures

**S**EVEN CAVES in a Texas wilderness, and in the floor of each cave the skeleton of a young child—this is the strange discovery announced by Frank M. Setzler, archaeologist of the U. S. National Museum, who has been exploring caves in the Big Bend region of southern Texas. The air of mystery which tinges all prehistoric happenings in America hangs heavy over this semi-desert Texas country. The seven caves explored by Mr. Setzler were inhabited by a people who have not been identified.

"Last year, I made the first scientific excavation at a cave in the region," said Mr. Setzler, "and found one child buried in the cavern floor. Now, this year, I have explored the depths of seven more caves and there are seven more child burials. Not a child is over two years old. What it means, we do not yet know. Some ceremonial, some superstition may account for it.

"Not a trace has yet been found of any skeletal remains of the older people who inhabited these caves."

Huge heaps of bones and other refuse which accumulated in the dark, dusty cave apartments were excavated by the archaeologist. Examining the trash heaps, Mr. Setzler concludes that these cave dwellers were remarkably successful and ingenious in putting to good use the plants and animals of their wild, semi-desert land.

The cave dwellers gathered corn-cob cactus, maguey, and a plant of the yucca family called Lechuguilla. They pulled off the leaves of this latter plant and are them like artichoke leaves, leaving huge cuds with tooth-marks in them, in their cave kitchens.

The ancient cave dwellers tried a hand at farming, even though they could expect only one or two good rains in a year. A buckskin bag, which Mr. Setzler found, still held two kinds of beans and a few kernels of corn, possibly the seed saved for a farmer's planting.

The variety of bones in the caves show that the inhabitants are deer, bear, antelope, fox, lynx, rabbit. Being close to the Rio Grande, they added fish and

terrapin to their menus. For clothing, the cave dwellers apparently depended on the Lechuguilla plant. By chewing the fiber they could make a thread very much like cotton. Yards of this cordage were found, and one perfect piece of cloth, like a salesman's sample, showing how the cord was sewn together with finer thread to make a fabric.

One of the mysterious features of this cave life is a total absence of pottery. At least, Mr. Setzler reports that he sifted tons of earth from the caves without finding a single scrap.

The objects found in the caves present a confusing picture of prehistoric Indian life, which is like and unlike other cultures. A curved rabbit-stick, used in hunting, is a prized relic from one of the caves. Just such sticks were used by the old Basket Makers, who lived in the Southwest before the Pueblos, from about 2000 B. C. to about the time of Christ. The Texas cave dwellers were also like the Basket Makers in that they wore square-toed sandals. But just as these clues seem to point to the identity of the Texans, Mr. Setzler picks up a feathered arrow shaft and says that they used bows and arrows, which were weapons of the Pueblos and Plains tribes, quite unknown to the old Basket Makers.

The caves of the unknown Indians, explored by Mr. Setzler, were near the border. Two of the caves are on the southern "ear" of the famous landmark, Mule Ear Peaks. Two are in the Sunny Glen Canyon, eight miles west of Alpine, Texas.

*Science News Letter, June 25, 1932*

## ORNITHOLOGY

## Tamed Hummingbirds Eat From Mouth of Man

**H**UMMINGBIRDS, once thought quite untamable, have become so familiar with Ralph J. Ayer, a nature-loving farmer near Eastonville, Colo., that they will not only "eat out of his hand," but even from between his lips.

Noticing several of the little birds about his flowers, he decided to make

pets of them. He placed a few perfume bottles filled with diluted honey among the flowers, but the hummingbirds would not eat from them. But when artificial flowers were placed over the mouths of the bottles, they sipped from them. By degrees the bottles were brought nearer the house and eventually the bottles were placed on the window-sill. The Ayer family enjoyed watching the birds sip from the nectar bottles and then wipe their beaks on the window-pane. Finally they became so tame that they would come up and feast, "face to face" with their friends.

Several of the birds have been tame each year since he started his experiment in 1928, which leads Mr. Ayer to believe that the same birds have returned each year since that time.

*Science News Letter, June 25, 1932*

## PHYSIOLOGY

## Synthesis of Vitamin A By Light Is Disputed

**T**HE EAGERLY awaited results of the biological tests undertaken by Drs. F. P. Bowden and C. P. Snow, of Cambridge University, cannot give the final proof that the carrot pigment, beta-carotene, has been changed into the growth-promoting vitamin A. Prof. I. M. Heilbron and Dr. R. A. Morton of the University of Liverpool hold in a letter to *Nature*, because carotene itself is transformed into vitamin A in the living body.

(Please turn Page)



**STRANGE FRIENDS**

Honey in a glass bottle and patient training resulted in this unusual pose.



Drs. Bowden and Snow believe that they have obtained vitamin A by the action of ultraviolet light on carotene, but, according to Prof. Heilbron and Dr. Morton, this could only yield hydrocarbons, that is, substances made up of hydrogen and carbon only. It could not give vitamin A which contains in addition oxygen in the form of an "alcohol group" (OH).

Another test on the power of absorption of light of wavelength 3280 Angstrom units, is not considered conclusive evidence, because iso-carotene, a colored substance readily obtained from carotene, has a sharp absorption band in the neighborhood of 3200 Angstrom units and similar substances other than vitamin A may be responsible for the absorption observed.

*Science News Letter, June 25, 1932*

## RADIO

## Voices Beautified For Radio By Ingenious Mechanisms

**Compensators and Filters Make It Possible for Same Voice to Speak in Different Accents at Operator's Will**

**A**CCUSTOMED as the public is to retouched photographs that flatter, lightning hair color changes for lovely ladies, "ghosted" books and magazine articles, there is a sense of shock in the idea that radio voices of political speakers can be beautified.

Granted that they need it, the speculation is what effect this possibility may have on coming political events. A former Federal radio commissioner, now editor of *Electronics*, Orestes H. Caldwell, recently let the public in on secrets of radio's voice beauty parlors.

Plug in the proper combination of electrical gadgets in connection with the microphone, says Mr. Caldwell, and almost any political speaker's voice may be given charm and persuasiveness.

Sounds over the radio can be changed by placing into the broadcasting circuits devices that vary, permanently or at the discretion of the radio control engineer, the frequency and volume. The electrical devices, compensators and filters, have been in common use in connection with commercial radio programs and in the making of talking motion pictures. Whether they have been used as yet to build up the vocal personality of any of our prominent public men is a matter of conjecture. It is certain that the radio, even when not doctored, does change the speaking voice.

Radio and other electrically transmitted sound devices are much kinder to high-voiced individuals than they are to deep-voiced "he-men" speakers. They have placed on pinnacles of momentary fame singers and announcers who must carry with them amplifying devices in

order to be heard by audiences of their "personal appearances."

There is even the possibility of appeal to sectional feeling for Mr. Caldwell suggests that appropriate compensators placed in branches of broadcasting networks would make the political candidate speak simultaneously with a shrill Yankee twang in New England, a Southern drawl in Dixie, and a breezy western accent in the West.

*Science News Letter, June 25, 1932*

## ENGINEERING-ECONOMICS

## Selling Gas by the Pound Allays Suspicions of Public

**D**O YOU pay for your domestic gas by the cubic foot, by the pound, or by the "therm"? It depends on the kind of gas you get—old-fashioned or modern.

Recent developments have brought out new styles in city gas. Two new gases, propane and butane, have become cheaply available from gasoline refineries. The new fuels, produced in large quantities, are a god-send to gas companies serving scattered districts. Unfortunately they are a source of worry to the accounting department. The public, accustomed to old-fashioned artificial gas at sixty or eighty cents a thousand feet, doesn't understand that it is fair to pay a much higher price per cubic foot for the new fuel.

## ENGINEERING

## Artificial Lightning Flashed At Ten Million Volts

**See Front Cover**

**T**HE MOST powerful man-made lightning is flashing across the cover of this week's SCIENCE NEWS LETTER from new equipment in the Pittsfield laboratories of the General Electric Co., which has twice the capacity of any preceding apparatus of its kind.

This is a discharge through a 15-foot space of 50,000 amperes at 10,000,000 volts. The voltage is capable of projecting an arc a distance of 60 feet. F. W. Peek, Jr., was in charge of the development of the new equipment.

Just what can be done with the ten-million-volt discharge nobody knows yet. It is to be used in connection with research on natural lightning, the effects of which it can approximate more closely than has hitherto been possible. Whether or not this high voltage will produce cosmic rays or split the atom, as scientists have predicted, Mr. Peek said that only time will tell.

Yet powerful as the new apparatus is, its discharge represents real lightning in only a fractional way. The voltage of a natural lightning discharge, Mr. Peek stated, is one hundred million, or ten times that of his best artificial "thunderbolt."

*Science News Letter, June 25, 1932*

Heretofore a gas company has been compelled to build a costly gas manufacturing plant, or a long and expensive pipe line to serve a town far removed from the metropolis. Propane and butane, on the other hand, can be liquefied and shipped economically by rail to a distant small town. One cubic foot of propane will yield as much as three hundred cubic feet of excellent fuel gas upon evaporation. These new gases are extremely rich, running from 2,500 to 3,200 on the heat unit scale in contrast with the 600 units from common city gas. Such fuel is obviously worth two or three dollars per thousand cubic feet.

Unfortunately the gas company, like the plumber and the tax collector, is a conventional object of public distrust.

## PHYSICS

# Slow Electrons Make Possible "Polar Light" in Laboratory

French Scientist Who Duplicated Aurora Will Spend Winter in Arctic Continuing Study of the Original Light

By DR. VICTOR COFMAN

VERY SLOW electrons bent by the action of a magnetized sphere produce "laboratory auroras" in an apparatus devised by Dr. Alexandre Dauvillier, professor at the Ecole Supérieure d'Electricité of Paris. Dr. Dauvillier is a member of the French "polar year" expedition, and will spend the coming winter at Scoresby Sound, on the Greenland coast, to obtain final proof of the continuity of the aurora lights right around the polar regions. To this end he will cooperate with the polar expeditions sent by other nations who take part in the "polar year" program.

The apparatus in which the aurora can be observed consists of a hollow sphere of aluminum, representing the earth; within it there is a slightly smaller iron sphere, also hollow and partly surrounded by conducting wire, so that it can be magnetized to give a magnetic field similar to that of the earth. The whole apparatus is enclosed in a large glass bulb the air pressure in which is reduced to one millionth of an atmosphere to correspond to the conditions in the upper atmosphere, where the aurora takes place. The sphere can be rotated around its axis, or the axis rotated, showing the daily and annual variations.

## Ring Around "Polar Regions"

The stream of slow electrons of 200 volts energy obtained from a hot cathode introduced into the glass bulb, is there deflected by the magnetized sphere. The electrons strike the molecules of the rarefied air and liberate secondary electrons that cause luminous effects, resembling the aurora light. They form a ring right around the "polar regions," corresponding to the rings partially observed by Nordenskjöld in 1878, during the expedition of the "Vega."

On a cosmic scale, the electrons needed to produce the auroras have their origin indirectly in the sun. The sun sends out enormous numbers of electrons. These "primary" electrons are deflected by the earth's magnetism and sur-

round the earth at a great height. Some of them strike the upper atmosphere and yield secondary electrons that give the multi-colored luminescence of the auroras, so greatly admired by visitors to polar regions.

The different auroral arcs observed by Nordenskjöld represent, according to Dr. Dauvillier, the "lines" of the earth magnetic spectrum of solar electrons. From the curvature of these arcs one may calculate the velocity, and therefore the energy of the electrons. This is found to be very great indeed representing a velocity very nearly that of light itself, which has the highest known velocity of anything in the world, about 186,000 miles per second.

*Science News Letter, June 25, 1932*

## ASTRONOMY

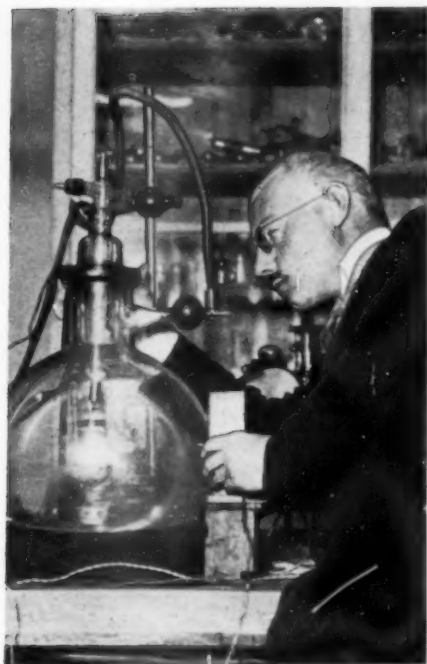
## Native Name Shows Meteorites Not Ancient

"CHINDU chinna waru chingi yabu," meaning "sun walk fire devil rock" is the name which Australian aborigines give to the meteorite craters at Henbury, Central Australia, according to J. M. Mitchell, prospector. This makes it probable that the remarkable shower of meteorites which produced craters up to 220 yards in diameter may have taken place in such relatively recent times that tradition has preserved this descriptive name. Old blacks are still afraid to camp within a mile of the craters, it is stated.

The earlier opinion expressed when these meteorite craters were first discovered last year, was that their age must be reckoned in terms of thousands of years, because there were traces of several generations of "mulga" trees having grown in the craters, and certain of the meteoric iron fragments were completely disintegrated in spite of the dry climate.

Dr. L. J. Spencer of the British Museum of Natural History recently exhibited a number of these meteorites before the Royal Society of London.

*Science News Letter, June 25, 1932*



### AURORA IN A BOTTLE

Dr. Alexandre Dauvillier, Parisian scientist, is producing synthetic "polar light" in this large glass bulb. The earth is represented by the small sphere inside and the artificial aurora is playing around it. Dr. Dauvillier will spend next winter in the Arctic to check his theory.

Hence, if the gas company decides to junk the old town gas plant and sell butane at three dollars a thousand, long and loud is the wail of protest to the utility commission.

California gas authorities, anxious to escape this unpopularity, in some cases are selling the new rich gas by the pound. The uninitiated do not understand whether the price is high or low, and have to be contented with the realization that the money figures on their bills are the same as ever. One company mixes its high-powered fuel with five volumes of air before delivery. This air is insufficient to make the gas explosive but brings its cubic-foot price down to a point which pleases the customer.

Best of all is the new custom of selling gas by the "therm." This new unit of measure, like the kilowatt-hour of the electric utilities, deals neither with meaningless volume nor weight, but with real heat value—the thing we pay for. One therm is enough gas to heat about 600 pounds of water to the boiling point. In certain eastern cities, where future gas prospects are uncertain, a consumer knows exactly what he is getting by paying a fixed price per therm.

*Science News Letter, June 25, 1932*

MEDICINE

# Climate and Your Health

## Stimulating Regions Rapidly Wear Out Body Machinery By Driving You to Live at Too Swift a Pace

By JANE STAFFORD

**T**HE CLIMATE of the place you live in has a subtle effect on your health and bodily machinery.

This new theory has been advanced by an Ohio physician, Dr. Clarence A. Mills of the University of Cincinnati College of Medicine, who has spent three years trying to discover and to explain the relation of climate and the weather to the health of man.

Maybe you have already been holding the stormy weather responsible for your neuralgia or your rheumatism. Or, if you live near the sea, you are probably used to blaming the damp, seacoast climate for the foggy throat and stuffy nose you awake with nine mornings out of ten.

Dr. Mills' study, however, indicates a somewhat different effect which the climate may have on your health.

"The evidence so far indicates that the response to climatic changes or differences involves mainly the glands of internal secretion, particularly the pancreas, thyroid, suprarenal and sex glands," Dr. Mills stated.

His theory is that in certain regions the drive of a too greatly stimulating climate is forcing an increasing number of people to live at such a fast pace that their body machinery breaks down under the strain. This does not refer merely to the swiftness of night club life, either, but to the intensity and rate of work as well as play. Dr. Mills even goes so far as to suggest that our very civilization may be threatened by the drive of an overstimulating climate. He does say that the factors which will limit the advance or progress of our civilization are already in evidence and that they can be expected to increase in severity as the pace of life still further accelerates.

### Climate in Treatment

Furthermore, he advises that climate should play a part in the treatment of certain diseases, and that patients suffering from them should be sent to regions where the climate is less stimulating.

These theories are based on investigations which have been carried on in

two directions, experimental and statistical. He has recently reported on the results of the statistical investigations. These showed a relation between different types of climate and the deathrates for certain diseases. They also seem to upset some popular notions about climate and health.

The stimulating climate of the northern and northwestern parts of the United States, for instance, has popularly been considered more healthful than the sluggish, semi-tropical climate of the South. Dr. Mills' studies, however, indicate that the climate in some regions may have too stimulating an effect on certain bodily processes. Where the climate is most stimulating, Dr. Mills found that the deathrates from diabetes, exophthalmic goiter and Addison's disease were highest.

Dr. Mills' studies start with a map of the country on which are shown areas where the climate has the most stimulating effect and areas where it has the least stimulating effect.

You probably think of a stimulating climate as one where all the days are bright and sunny but the air is always brisk and cold. Scientists, however, have a different idea of a stimulating climate.

### Index of Stimulation

The effect of climate on man depends on several factors, Dr. Mills explained. Chief of these is temperature, but here again two factors enter in. One of these is the average degree of temperature and the other is the variability of temperature. Human efficiency is greatest when the temperature averages about 64 degrees Fahrenheit. Temperatures above this level or below 38 degrees Fahrenheit have been found to lower human efficiency. Frequent fluctuations in the day to day temperatures are also important for producing stimulating effects on human beings.

So in plotting his map, Dr. Mills took into consideration the daily maximum and minimum temperature readings for a year, the variation in temperature from day to day in each locality, and the days when the temperature in that locality was above 64 degrees Fahrenheit or below 38 degrees Fahrenheit.

With these figures and by a process of mathematical calculation, he found an index to the stimulating effect of the climate in each of many different localities over North America.

Two areas where the climate is greatly stimulating appear on his map. One of these extends from the northwest prairie provinces of Canada across the Central States in the United States and east to the Atlantic Coast. The climate of this region is stimulating mainly because of the great variability of the temperature. The other area where the climate is very stimulating is located on the Pacific Coast, extending from San Francisco northward to the region north of Seattle and Vancouver. Here the temperature does not vary much but during almost the entire year it is within the best limits for human activity.

### South Non-Stimulating

Almost the entire South on the other hand, has a climate which has very little stimulating effect. This is because the temperature does not vary enough from day to day and because for a good part of each year the temperature, being above 4 degrees Fahrenheit, has a depressing instead of stimulating effect on human activity.

Next Dr. Mills charted on his map the deathrates for various diseases in the different states and provinces of the continent.

"On comparing the map of climatic stimulation with the one showing deaths from diabetes mellitus, one notes a significant similarity," he pointed out.

Diabetes is most severe and its death-rate highest in those areas where the climate is the most stimulating, while in the South and far North, where the climate is non-stimulating, it is a much milder disease. This suggests to Dr. Mills that a climate which stimulates certain body processes to the point of exhaustion may be a factor which determines how many cases of diabetes there will be in a given population.

Study of the maps showed further surprising relations between climate and disease. In the same areas where the climate is most stimulating and where diabetes is most severe and its death-rate most high, deaths from exophthalmic goiter, a disease of the thyroid gland, are most numerous.

Patients suffering from this disease are thin and nervous and have the bulg-



ing eyes which give the disease one of its names. In this condition the gland is over-active and produces too much of its hormone, thyroxin. Since it is this hormone which regulates the pace of the body's activity, it is easy to see that too much of it, which makes the body's fires burn faster and faster, consuming every available scrap of fuel, would drive the body's machinery at such a rapid pace that it would soon wear out. Fortunately, the activity of this gland can in most cases be regulated by either surgical or medical means.

### Metabolic Diseases

Another glandular system appears to be affected by the drive of a stimulating climate. Deaths from Addison's disease, a condition resulting from exhaustion of the suprarenal glands, make up a bigger percentage of the total deaths in those regions where the climate is most stimulating.

Deathrates from pernicious anemia, the disease in which there are not enough red cells in the blood, and from leukemia, in which the blood has too many white cells, are higher in these regions, indicating that the diseases of the blood-forming organs are also more common in regions where the climate is greatly stimulating.

The map of cancer deaths is remarkably similar to that of climatic stimulation and to those of the diseases like diabetes and exophthalmic goiter, in which there is a breakdown in some of the normal activities and processes of the body. Physicians call these ailments metabolic diseases because they affect the body's metabolism. This foreign-sounding word is taken from the Greek and is the term for the building-up and breaking-down processes, and for the changes of food into fuel and energy and fat and other tissue and back again into fuel and energy, that are constantly going on in the body. The Greeks did not have a name for this, but scientists have made one for it from a Greek word meaning change.

In cancer, the breakdown or metabolic disturbance is localized, Dr. Mills points out, but even this condition is much more common in the regions where the climate is highly stimulating.

It is not only bodily failure which seems to be positively correlated with the stimulating effects of climate. Suicides, which Dr. Mills took as the best index of mental failure, were studied with regard to their frequency in various localities.

"Strikingly enough," Dr. Mills found,

"the suicide map does show the same climatic relationship as exists for the metabolic diseases."

The greatest number of suicides per 100,000 population was found in the Pacific Coast and northwest region extending from below San Francisco to a little above Vancouver on the map, and inland about 300 miles, taking in part of Nevada, most of Oregon and Washington, and the southwestern corner of British Columbia. It is this region which studies of climate show has the most stimulating climate.

Ellsworth Huntington, who has also made extensive studies of climate and its effect on mankind, calls attention to the same condition in one of his discussions of climate.

"The chief defect of the climate of the California coast is that it is too uniformly stimulating," he says. "Perhaps the constant activity which it incites may be a factor in causing nervous disorders. When allowance is made for the fact that California's urban population is relatively smaller than that of states like Massachusetts and New York, insanity appears to be even more prevalent than in those states."

### Suicide in California

"Moreover, the cities of the California coast have the highest rate of suicide. In proportion to the population the number of suicides is greatest in San Francisco; then come San Diego and Sacramento; while Los Angeles and Oakland are exceeded only by Hoboken and Saint Louis."

"Possibly these facts may be connected with the constant stimulation of the favorable temperature and the lack of relaxation through variations from season to season and day to day, although other factors may also play a part. The people of California may perhaps be likened to horses which are urged to the limit so that some of them become unduly tired and break down."

According to Dr. Mills' figures, the suicide rate in the area of most stimulating climate ranges from 18 per 100,000 population to 28 per 100,000. In the New York, New England and New Jersey area the rate varies from 11.6 to 13.2 per 100,000. In the rest of the area of second greatest climatic stimulation, including the central plains, middle west and middle Atlantic regions, the suicide rate ranges from 12.2 to 16.7 per 100,000. But in Florida, where the climate has very little stimulating effect, the suicide rate is fairly high, being 16.2 per 100,000.

From these studies, Dr. Mills concluded that there is apparently a direct relationship between the stimulating effect of the climate and the breakdown of human metabolism, that constant interchange of energy which is necessary to life.

"In the stimulating areas of the North and Northwest, humanity pays the price in its increasing metabolic breakdown for its rapid industrial development," Dr. Mills observed.

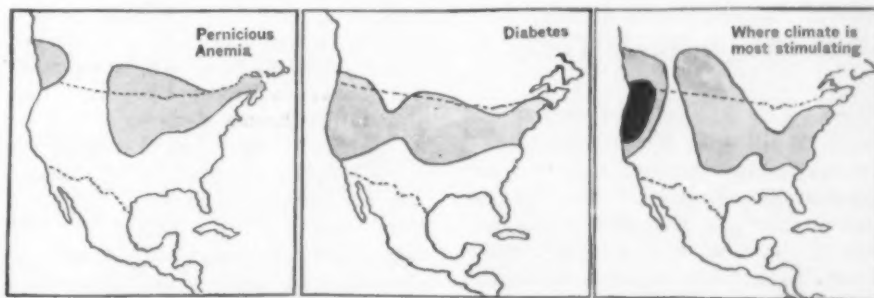
"In the non-stimulating South, material development is more sluggish and the metabolic functions less disturbed."

Dr. Mills makes no recommendations as to whether you should change your residence because of the climate, but he does give some advice for those who suffer from the diseases considered in his study, diabetes, pernicious anemia, exophthalmic goiter and the like.

"It is suggested that great benefit may be derived from the climatic treatment of the metabolic diseases," he says. "Cases of metabolic or mental breakdown should be sent south for treatment whenever possible so that they might have the benefit of the lessened vigor of the climatic drive."

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Science News Letter, June 25, 1932



DISEASE MAPS

The shaded portions of the map on the right show where the most stimulating climate is found. Strikingly, deathrates from pernicious anemia and diabetes are highest in very much the same regions.

## ASTRONOMY

## Sun May be Changing Its Speed of Rotation

FOR MANY YEARS astronomers have known that the sun varies in light over an eleven-year period, as the sun-spots wax and wane. The suggestion that it also varies in the speed of its rotation, but in a period of about thirty years, has been made in a report to the Royal Astronomical Society by John Evershed, following researches made in his private observatory in Surrey.

Dr. Evershed's study is concerned with the sun's equator, where the speed of the surface is about a mile and a quarter, or two kilometers, a second. His observations were made by photographing the edge of the sun with the spectroscope. By measuring the shift of the dark lines which appear in such photographs, the motion towards or away from the earth can be determined.

The mean value of eleven such measures, as made over a period from July to December, 1931, is 2.015 kilometers per second, a value which may be in error as much as .026 kilometers. Previous determinations by other astronomers with similar means have given different values. Those made before 1911 gave values over two kilometers per second, while those made after 1915 gave between 1.90 and 1.94 kilometers per second. A series made by Dr. Charles E. St. John, of the Mt. Wilson Observatory, beginning in 1914, showed close agreement, with a minimum of 1.90, until 1929, when there was a tendency for the value to increase, with 1.95 being obtained. Dr. Evershed's new results, with a value in excess of two kilometers a second, a return to the measures made between 1900 and 1911, indicate that the change in speed actually occurs.

*Science News Letter, June 25, 1932*

## ARCHAEOLOGY

## Clues to Foreign Trade Unearthed in Bible Town

EXCAVATIONS in the ruins of old Beth Shemesh, fifteen miles west of Jerusalem, have yielded objects showing that this Biblical city was for centuries one of the busy commercial centers of Palestine, with a brisk international trade. Beth Shemesh is famous ground because Samson was born in the neighborhood, and it was somewhere nearby that Delilah lived.

Dr. Elihu Grant, who has directed the

Haverford College expedition to Beth Shemesh for four years, announces as discoveries from the site such articles as handsomely made bronze rings with Egyptian scarabs and an Egyptian bowl made of a single block of hard diorite stone. The bowl is very old. It was made a thousand years before the era of the Hebrew kings in Palestine. The history of Beth Shemesh goes back to a settlement of about 2000 B. C.

"We found Beth Shemesh," Dr. Grant explains, "a terraced, tongue-like little plateau with the shadowy stumps of an encircling wall built 3500 years ago. Since Beth Shemesh, which means City of the Sun, was on the border between the hill country and the rich agricultural plains across which the caravan-trading roads ran between Egypt and the north, we expected to find the remains of an important civilization.

"Our newest findings particularly show us that we were right in our conjectures. Beth Shemesh shows up well as a lively commercial town open to the currents of trade, politics, and the arts of all the Mediterranean world. It drew its supplies from Egypt, as is proved by the perfectly-ground Egyptian milk bowl we discovered lately. It also imported pottery from Cyprus and Crete as well as other lands on the Mediterranean.

"I brought back with me several beautifully painted jugs from Crete, as well as imported carnelian beads from Cyprus. Egyptian scarab rings were popular thousands of years ago in Palestine."

Dr. Grant and his party of diggers have uncovered at Beth Shemesh the plans of four cities at different depths. Remnants of city walls, forts, houses, and even a street have been unearthed. They found large cisterns containing valuable treasures, and excavated a Byzantine Arab temple.

"The mound of rock upon which we concentrated," Dr. Grant continued, "was low and covered with not more than twenty feet of soil, rubbish, and ruins. For each layer of rock a yard deep there was likely to be a distinct period of civilization. We found relics that carried us from the late Iron Age back to the Bronze Age.

"We found food jugs that belonged to the Hebrew prophets and from which they ate, back in 600 B. C. Some of these large jugs were full of fat and very delicately made. We found an olive-oil refinery of that time, which proved that they seasoned their food. We found carbonized raisins, wheat, and barley."

*Science News Letter, June 25, 1932*

# IN SCIENCE

## ARCHAEOLOGY

## Soviet Divers Explore Lost City Sunk in Black Sea

WITH THE AID of trained divers and telephones connected with motor boats, Soviet scientists have explored the ruins of a submerged Greek city lost for 2,000 years beneath the waters of the Black Sea.

The city is tentatively identified as the famous "Old Chersonesus," described by Strabo, classical geographer of the first century. The ruins are about ten miles south of Sevastopol, in Crimea, and are 100 feet out beyond the present shore line. It appears that the shore line, which is still retreating, was pursued by the advancing sea much more rapidly in antiquity, and the flourishing seaside town was destroyed.

Exploration of the ruins was undertaken by an expedition of the State Academy of Moscow.

*Science News Letter, June 25, 1932*

## ZOOLOGY

## Animal Thought Extinct Has Been Rediscovered

THE AUSTRALIAN rat-kangaroo, lost to science since 1843, has been rediscovered, hale and frisky, in the sandhill country enclosed by the Diamantina and Cooper's rivers at the junction of South Australia and Queensland.

The scientific periodical *Nature* has published a letter from H. H. Finlayson, Adelaide University, saying that since 1843, when Sir George Grey presented three specimens to the British Museum, no one had been able to trace this peculiar animal to its lair, and it was feared that it had become as dead as the dodo. But indications are that the rat-kangaroo has had a long and probably uninterrupted tenure of the semi-desert area where it has been re-discovered. The passing of the drought conditions has probably helped to increase its numbers.

The Australian rat-kangaroo is one of the marsupials, animals possessing a pouch in which they carry the young for a considerable time after birth.

*Science News Letter, June 25, 1932*



# SCIENCE FIELDS

## PHYSICS

## Diamonds Yield Electricity When Bathed With Light

SCIENTISTS are puzzled by the behavior of certain rare types of diamond, which are transparent not only to ordinary light but also to ultraviolet down to a wavelength of 2300 Angstrom units, and to infra-red heat rays of 8000 Angstrom units (an Angstrom unit is about four billionths of an inch.) These diamonds, of which very few are known, give an electric current when illuminated by certain kinds of light.

"Out of some 250 diamonds which I have tested," declared Sir Robert Robertson, Chief Chemist to the British Government, "only five have shown this power to generate an electric current. I think that I can now recognize such diamonds in a simpler manner from their behavior in polarized light."

Sir Robert showed a photosensitive diamond at a recent experimental evening of the Royal Society of London. The precious stone was clamped between two carbons. Brass or lead can also be used to make electrical contact. When illuminated by ultraviolet or by extreme red light it gave an electric current that produced a deflection in a galvanometer, so long as the light shone on the diamond. This photoelectric effect is different from that which occurs in the "electric eye" instruments, where electrons are dislodged and thrown out into vacuum by the impact of light rays or quanta upon certain sensitive metals.

*Science News Letter, June 25, 1932*

## GENETICS

## One Type of Deafness Found to be Sex-Linked

TWICE as many women as men are affected with the type of deafness known to physicians as otosclerosis. This and other facts point to an hereditary origin for this physical defect, Dr. Charles B. Davenport, of the department of genetics, Carnegie Institution of Washington, Cold Spring Harbor, Long Island, told a meeting of the Eugenics Research Association.

The hereditary mechanism by which

this particular type of deafness is handed on from father to son, or more accurately from father to daughter, consists of two defective genes, one of which is in the sex-controlling chromosome. The sex-linked gene, it is thought, acts in some way to upset the body's use of the bone-forming food calcium, while the other works directly to produce the deafness. The disease may also be associated with a disturbance of the pituitary gland, a gland which in youth and middle life exercises considerable control over body changes.

Although otosclerosis is thought to affect only about two or three per thousand of the white population of the United States, a much higher proportion is observed among the members of the family of any individual who is affected with it, Dr. Davenport reported. Often from one-quarter to one-half of such a family group are troubled with hardness of hearing. This strengthens the view that otosclerosis has a genetic basis.

*Science News Letter, June 25, 1932*

## PHYSICS

## Cosmic Ray Tracks Occur In Groups of Two or Three

THE TRACKS of the intensely penetrating cosmic rays, recently photographed for the first time, occur in groups of two or three, apparently radiating from one point, more often than can be accounted for by chance, Dr. Gordon L. Locher of the Rice Institute at Houston, Texas, has found. His discovery has been reported to the American Physical Society through its *Physical Review*.

Dr. Locher concludes from this that these tracks are not actually the paths along which the cosmic rays travel on their way in from the depths of space. The incoming cosmic rays are, he believes, probably photons or wave-light rays which strike an atom to produce two or three speeding electrons simultaneously. The paths of these secondary electrons produce the tracks that can be photographed.

If Dr. Locher is right in his interpretation, his experiments help settle the much-disputed question as to whether the cosmic rays are moving particles or wave-like rays much shorter than X-rays.

Electrically charged particles produced in the air by the cosmic rays are much less numerous per inch along the tracks than had formerly been believed, according to Dr. Locher's new findings.

*Science News Letter, June 25, 1932*

## BOTANY

## Sprouting of Drunken Seeds First Speeded, Then Delayed

GIVING seeds a "shot" of alcohol seems to have much the same effect on them that it has on human beings: it peps them up for a little while, then brings about a depressed state. A second dose restores vigor temporarily, but the following depression is even deeper.

These are, in brief, the results of observations on the seeds of red pine immersed in absolute alcohol for the purpose of floating off the dead and empty ones, reported in the *American Journal of Botany* by Dr. Henry I. Baldwin of Saranac Lake. Dr. Baldwin found that seeds immersed for a short time had their rate of germination appreciably increased when planted immediately. But if they were stored for several months the germination rate fell off, as compared with "teetotaler" seeds. Given a second soaking in alcohol, these inebriated seeds underwent a short-lived regeneration of their sprouting capacity, then lost it again.

*Science News Letter, June 25, 1932*

## MINING

## Gold Mine Accumulates World Surplus of Arsenic

THE BOLIDEN mine in northern Sweden is expected to bring that country to the position of the largest producer of gold in Europe, among the first ten in the world, with an annual output of about 320,000 ounces. To achieve this position, however, the company, in operating the mine, must also produce copper and silver, selling at low prices, and a large amount of arsenic. The oxide is the form in which the metal is obtained during roasting operations.

The entire world consumption of arsenical poison could be supplied from this mine. The problem of disposing of this by-product surplus after commercial demands had been met proved difficult. At first the white arsenic, as it is called, was mixed with the ingredients for concrete, and the shapes were sunk in deep water in the Gulf of Bosnia, on whose shore the smelter is situated. Storage has now been provided for 120,000 tons—a stock that will prove a menace to producers in other countries, for the Boliden arsenic can be sold to the company's advantage at any nominal price.

*Science News Letter, June 25, 1932*

BIOLOGY

# The American Eagle

## "A Classic of Science"

**The National Emblem Was Well Known to Our Forefathers When Audubon, Hunter, Artist, Scientist, Described Him**

*ORNITHOLOGICAL BIOGRAPHY, or An Account of the Habits of the Birds of the United States of America, by John James Audubon, Edinburgh, 1831-39.*

**T**HE FIGURE of this noble bird is well known throughout the civilized world, emblazoned as it is on our national standard, which waves in the breeze of every clime, bearing to distant lands the remembrance of a great people living in a state of peaceful freedom. May that peaceful freedom last for ever!

The great strength, daring, and cool courage of the White-headed Eagle, joined to his unequalled power of flight, render him highly conspicuous among his brethren. To these qualities did he add a generous disposition towards others, he might be looked up to as a model of nobility. The ferocious, overbearing, and tyrannical temper which is ever and anon displaying itself in his actions, is, nevertheless, best adapted to his state, and was wisely given him by the Creator to enable him to perform the office assigned to him.

The flight of the White-headed Eagle is strong, generally uniform, and protracted to any distance, at pleasure. Whilst travelling, it is entirely supported by equal easy flappings, without any intermission, in as far as I have observed it, by following it with the eye or the assistance of a glass. When looking for prey, it sails with extended wings, at right angles to its body, now and then allowing its legs to hang at their full length. Whilst sailing, it has the power of ascending in circular sweeps, without a single flap of the wings, or any apparent motion either of them or of the tail; and in this manner it often rises until it disappears from the view, the white tail remaining longer visible than the rest of the body. At other times, it rises only a few hundred feet in the air, and sails off in a direct line, and with rapidity. Again, when thus elevated, it partially closes its wings, and glides downwards for a considerable space, when, as if disap-

pointed, it suddenly checks its career, and resumes its former steady flight. When at an immense height, and as if observing an object on the ground, it closes its wings, and glides through the air with such rapidity as to cause a loud rustling sound, not unlike that produced by a violent gust of wind passing amongst the branches of trees. Its fall towards the earth can scarcely be followed by the eye on such occasions, the more particularly that these falls or glidings through the air usually take place when they are least expected.

At times, when these Eagles, sailing in search of prey, discover a Goose, a Duck, or a Swan, that has alighted on the water, they accomplish its destruction in a manner that is worthy of your attention. The Eagles, well aware that waterfowl have it in their power to dive at their approach, and thereby elude their attempts upon them, ascend in the air in opposite directions over the lake or river, on which they have observed the object, which they are desirous of possessing. Both Eagles reach a certain height, immediately after which one of them glides with great swiftness towards the prey; the latter, meantime, aware of the Eagle's intention dives the moment before he reaches the spot. The pursuer then rises in the air, and is met by its mate, which glides toward the water-bird, that has just emerged to breathe, and forces it to plunge again beneath the surface, to escape the talons of this second assailant. The first Eagle is now poising itself in the place where its mate formerly was, and rushes anew to force the quarry to make another plunge. By thus alternately gliding in rapid and often repeated rushes, over the ill-fated bird, they soon fatigue it, when it stretches out its neck, swims deeply, and makes for the shore, in the hope of concealing itself among the rank weeds. But this is of no avail; for the Eagles follow it in all its motions, and the moment it approaches the margin, one of them darts upon it, and kills it in an instant, after which they divide the spoil.

During the spring and summer, the White-headed Eagle, to procure sustenance, follows a different course, and one much less suited to a bird apparently so well able to supply itself without interfering with other plunderers. No sooner does the Fish-Hawk make its appearance along our Atlantic shores, or ascend our numerous and large rivers, than the Eagle follows it, and, like a selfish oppressor, robs it of the hard-earned fruits of its labour. Perched on some tall summit, in view of the ocean, or of some water-course, he watches every motion of the Osprey while on wing. When the latter rises from the water, with a fish in its grasp, forth rushes the Eagle in pursuit. He mounts above the Fish-Hawk, and threatens it by actions well understood, when the latter, fearing perhaps that its life is in danger, drops its prey. In an instant, the Eagle, accurately estimating the rapid descent of the fish closes his wings, follows it with the swiftness of thought, and the next moment grasps it. The prize is carried off in silence to the woods, and assists in feeding the ever-hungry brood of the marauder. . . .

The nest, which in some instances is of great size, is usually placed on a very tall tree, destitute of branches to a considerable height, but by no means always a dead one. It is never seen on rocks. It is composed of sticks, from three to five feet in length, large pieces of turf, rank weeds, and Spanish moss in abundance, whenever that substance happens to be near. When finished, it measures from five to six feet in diameter, and so great is the accumulation of materials, that it sometimes measures the same in depth. It being occupied for a great number of years in succession, and receiving some augmentation each season. When placed

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## Silicon, Tin and Lead

Early moments in their history will constitute

THE NEXT CLASSIC OF SCIENCE

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in a naked tree, between the forks of the branches, it is conspicuously seen at a great distance. The eggs, which are from two to four, more commonly two or three, are of a dull white colour, and equally rounded at both ends, some of them being occasionally granulated. Incubation lasts for more than three weeks, but I have not been able to ascertain its precise duration, as I have observed the female on different occasions sit for a few days in the nest, before laying the first egg. Of this I assured myself by climbing to the nest every day in succession during her temporary absence,—a rather perilous undertaking when the bird is sitting.

I have seen the young birds when not larger than middle-sized pullets. At this time they are covered with a soft cottony kind of down, their bill and legs appearing disproportionately large. Their first plumage is of a greyish colour, mixed with brown of different depths of tint, and before the parents drive them off from the nest they are full fledged. As a figure of the young White-headed Eagle will appear in the course of the publication of my illustrations, I shall not here trouble you with a description of its appearance. I once caught three young eagles of this species, when fully fledged, by having the tree, on which their nest was, cut down. It caused great trouble to secure them, as they could fly and scramble much faster than any of our party could run. They, however, gradually became fatigued, and at length were so exhausted as to offer no resistance, when we were securing them with cords. This happened on the border of Lake Ponchartrain, in the month of April. The parents did not think fit to come within gun-shot of the tree while the axe was at work.

The attachment of the parents to the young is very great, when the latter are yet of a small size; and to ascend to the nest at this time would be dangerous. But as the young advance, and, after being able to take wing and provide for themselves, are not disposed to fly off, the old birds turn them out, and beat them away from them. They return to the nest, however, to roost, or sleep on the branches immediately near it, for several weeks after. They are fed most abundantly while under the care of the parents, which procure for them ample supplies of fish, either accidentally cast ashore, or taken from the Fish-Hawk, together with rabbits, squirrels, young lambs, pigs, opossums, or racoons. Every thing that comes in the way is relished by the young family, as by the old birds.



THE AMERICAN EAGLE

*Painted by Audubon and engraved for his great folio book: "The Birds of America, from original drawings by John James Audubon, published by the author. London 1827-38." The pictures and text, originally printed as separate books, were combined in later editions.*

The young birds begin to breed the following spring, not always in pairs of the same age, as I have several times observed one of these birds in brown plumage mated with a full-coloured bird, which had the head and tail pure white. I once shot a pair of this kind, when the brown bird (the young one) proved to be the female.

This species requires at least four years before it attains the full beauty of its plumage when kept in confinement. I have known two instances in which the white of the head did not make its appearance until the sixth spring. It is impossible for me to say how much sooner this state of perfection is attained, when the bird is at full liberty, although I should suppose it to be at least one year, as the bird is capable of breeding the first spring after birth.

The weight of the Eagles of this species varies considerably. In the males, it is from six to eight pounds, and in the females from eight to twelve. These birds are so attached to particular districts, where they have first made their nest, that they seldom spend a night at any distance from the latter, and often resort to its immediate neighborhood. Whilst asleep, they emit a loud hissing sort of snore, which is heard at the distance of a hundred yards, when the weather is perfectly calm. Yet, so light is their sleep, that the cracking of a stick under the foot of a person immediately awakens them. When it is attempted to smoke them while thus roosted and asleep, they start up and sail off without uttering any sound, but return next evening to the same spot.

Before steam navigation commenced on our western rivers, these Eagles were extremely abundant there, particularly in the lower parts of the Ohio, the Mississippi, and the adjoining streams. I have seen hundreds while going down from the north of the Ohio to New Orleans, when it was not at all difficult to shoot them. Now, however, their number is considerably diminished, the game on which they were in the habit of feeding, having been forced to seek refuge from the persecution of man farther in the wilderness. Many, however, are still observed on these rivers, particularly along the shores of the Mississippi.

In concluding this account of the Whiteheaded Eagle, suffer me, kind reader, to say how much I grieve that it should have been selected as the emblem of my country. The opinion of our great Franklin on this subject, as it perfectly coincides with my own, I shall here present to you. "For my part," says he, in one of his letters, "I wish the Bald Eagle had not been chosen as the representative of our country. He is a bird of bad moral character; he does not get his living honestly; you may have seen him perched on some dead tree, where, too lazy to fish for himself, he watches the labour of the Fishing-Hawk; and when that diligent bird has at length taken a fish, and is bearing it to his nest for the support of his mate and young ones, the Bald Eagle pursues him, and takes it from him. With all this injustice, he is never in good case, but, like those among men who live by sharpening and robbing, he is generally poor, and often very lousy. Besides, he is a rank (Please turn Page)



coward; the little King Bird, not bigger than a Sparrow, attacks him boldly, and drives him out of the district. He is therefore, by no means a proper emblem for the brave and honest Cincinnati of America, who have driven all the King Birds from our country; though exactly fit for that order of knights which the French call Chevaliers d'Industrie."

*Science News Letter, June 25, 1932*

In the buildings of ancient Rome, nine different kinds of colored marbles were widely used, and many other rarer kinds were occasionally introduced.

Some of the rarest tulips that brought fabulous prices during the Dutch tulip mania, in 1637, owed their peculiar featherings of color to a mosaic disease.

#### ARCHAEOLOGY

## Tepe Gawra Becomes Holder "World's Oldest Town" Title

"THE OLDEST Town in the World." This title of honor has suddenly been taken from other claimants and conferred upon the ruins of Tepe Gawra, in northern Mesopotamia.

The archaeologists who by their excavations have pushed back the history of cities to 3700 B. C. are with a joint expedition of the University of Pennsylvania Museum and the American Schools of Oriental Research. Dr. E. A. Speiser reported the discovery.

This oldest town ever found on earth

is far from being a bungling experiment that "just grew." The city fathers followed a carefully thought out planning scheme, Dr. Speiser reports. The heart of the settlement was an imposing forum. To the north were two shrines, connected by such buildings as bath houses and storage rooms. A citadel was near the center of town. The southern part of town was a residential section. The streets were well laid out, and on one street was a bazaar or market.

The planners gave thought to emergencies. They provided a capacious reservoir almost 100 feet deep, for a water supply in time of siege.

Dr. Speiser has high praise for the architectural talents of Tepe Gawra's early builders. They showed excellent taste, he states, in the restraint with which they checked their enthusiasm for elaborate ornament. They knew how to construct the true arch, and used their knowledge to build vaulted ante-chambers in the houses. This is pronounced the first time in history that the true arch appears. The discoveries at Tepe Gawra add a new and important chapter to the history of architecture.

The ruins which rank as the oldest town are buried eight layers deep. Ruins of the sixth layer are as old as the royal tombs of Ur. The eighth layer is pronounced 500 years older.

Ur of the Chaldees was hailed as the oldest town known, only a few years ago. Then, excavations at Susa revealed a town of greater age than Ur, only to be replaced now by the older settlement of Tepe Gawra. All these towns are in the Near East.

*Science News Letter, June 25, 1932*

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#### DIETETICS

## Pasteurized Milk Good For Children, Survey Shows

HEATING milk in the process of pasteurizing it to make it free from germs does not affect its nutritive qualities for children of from two to six years, Leslie C. Frank, sanitary engineer in charge of milk investigations of the U. S. Public Health Service, reported to the Conference of State and Territorial Health Officers with the

U. S. Public Health Service recently in Washington.

Mr. Frank made a house-to-house survey of over three thousand children of this age group in forty-one cities, getting information as to whether the children had been given raw or heated milk, and what their ages, weights and heights were. These children were from middle class American families, and their supplementary diet was that of the average American child. The children who had had raw milk for more than the latter half of their lives were no taller and just three-tenths of a pound lighter in weight, on the average, than the children who had had heated or pasteurized milk.

The problem is of particular importance because recently advocates of raw, unpasteurized milk have been claiming that heated milk lacked some of the growth-promoting properties present in raw milk. The children in Mr. Frank's survey who received predominantly raw milk had more diphtheria, scarlet fever, intestinal disturbances and rickets than the children getting predominantly heated milk, according to their parents' reports.

*Science News Letter, June 25, 1932*

#### ARCHAEOLOGY

### New Tomb Found at Famous Maya Capital

**A** NEW MAYA TOMB has been found under the main stairway of the "Castillo" at Chichen Itza, famous capital of the ancient Maya empire. As described by Eduardo Martinez Canton, Mexican archaeologist, the tomb consists of a stone box, in which were found four stone spearheads, covered with turquoise, a clay vessel with the bones of a snake, another vessel with numerous beads and articles of jade and turquoise, and a quantity of unidentified small bones.

The real prize of the discovery, however, consists of two bits of fine Maya cloth. The handiwork of Maya weavers is exceedingly rare, and every scrap of it recovered is highly treasured. In the tomb there was also a "sastun," or stone ball used in healing and divination ceremonies.

Senor Canton has also discovered that the Castillo, like many other Mayan and Mexican structures, is built over and around a still older pyramid. In this case the outer structure also conceals a stone-filled temple.

*Science News Letter, June 25, 1932*

#### ECONOMIC GEOGRAPHY

## Russia's Second Five Year Plan Calls for Far East Colonization

*Following is the second of a series of four articles on the tangled and vexed situation in the Far East as seen by leading geographers.*

**T**HE SECOND Five Year Plan set for Soviet Russia calls for the highest speed and the most ambitious progress in that strategic area to the north of Manchuria—the Siberian Far East.

"In the Far Eastern Region the tempo of industrial development is to be higher than in all other regions of the Union of Soviet Socialist Republics," says a report by the chairman of the State Planning Commission, V. V. Kuibyshev.

Far Eastern Siberia has been an ugly duckling country for a long time. It has universally had predicted for it a swan-like future. But the predictions were vague as to date. Now, it appears, Russia is ready to turn predictions into realities with magic speed.

The Russian Far East borders the Pacific in a thick irregular pattern on the map. This region, farther from Moscow than San Francisco is from New York, is to be transformed into a self-sufficient locality, according to the new Five Year Plan. It will depend less and less

upon products from other parts of the Soviet Union.

To achieve this transformation, other parts of the Soviet Union are to send colonists. There will be an extensive, organized migration, says M. Kuibyshev.

With man power transported into the sparsely peopled region, industrial projects will go forward rapidly, according to the plans. A metallurgical plant will rise at Suchan, to handle the iron ore and coal from nearby deposits. Fields of grain and flax and sugarbeets are to be extended. Livestock herds are to be increased. Many workers are to be kept busy at fur trapping and fishing.

Coal production is to reach ten or even twelve million tons by the dead line, 1937. Production of oil in Sakhalin and coal in Kamchatka is to be pushed.

Timber crews will work in the forests. And because the region is not to stop at producing raw materials, but is to be self-sufficient, there will be mills and factories to turn flax into cloth, sugarbeets into sugar and wood into paper.

Russia thus lays plans to take a firmer grip on her possessions in the Far East.

*Science News Letter, June 25, 1932*

#### PUBLIC HEALTH

## Race May Be Cause of Negro's Lower Tuberculosis Resistance

**E**VIDENCE that negroes are more apt to succumb to tuberculosis than white people because of an inherent racial difference appeared in a report of Dr. Taliaferro Clark of the U. S. Public Health Service to the National Tuberculosis Association.

However, the sociologic and economic factor is of undoubted importance in the negro tuberculosis problem, Dr. Clark pointed out.

Dr. Clark's report was largely based on studies of the tuberculosis situation among the negro population of the District of Columbia, where economic and social conditions are probably the best in the country for the negro, and in the veterans' hospitals where the negroes

receive the same attention and care as the white patients.

In the District of Columbia the tuberculosis deathrate among both whites and negroes has dropped enormously since the beginning of the century. However, the present tuberculosis rate there for the Negro is more than four times that of the white.

Among tuberculosis patients in veterans' hospitals, admitted in a moderately advanced stage of the disease, half of the negroes and three-fourths of the whites showed improvement or arrest of the disease. But 39 per cent. of the negroes and only 17 per cent. of the whites died during treatment.

*Science News Letter, June 25, 1932*

## MEDICINE

# No Danger of Malaria Epidemics In Inoculations to Fight Paresis

Recent Increases in Malarial Incidence in South Due To Floods, Storms, Etc., Rather Than to Clinical Use

**N**O APPRECIABLE danger of malaria spreading among the general population as a result of its use in the treatment of the brain disease, paresis, exists, in the opinion of Dr. L. L. Williams of the U. S. Public Health Service. Dr. Williams explained his reasons for this opinion in a report to the Conference of State and Territorial Health Officers with the U. S. Public Health Service held at Washington, D. C.

Dr. Williams also described the work of his associates in supplying hospitals for the treatment of mental disease with malaria-infected mosquitoes for their work. Most hospitals have only a few cases of paresis a year, and it is hard for them to carry the proper strains of infection along in between cases. So Dr. Bruce Mayne of the U. S. Public Health Service, working in laboratories of the South Carolina State Hospital for the Insane, breeds the mosquitoes, infects them with malaria germs, keeps them on ice, and when the call arrives from some hospital, ships them by express. He is at present working on the problem of how far he can successfully ship these mosquitoes without their dying or losing their desire to bite upon arrival.

When malaria is used in treating

paresis, best results are obtained by letting the paretic patient recover spontaneously from the malarial attack, without giving him quinine for the malaria. This results in the discharge from the hospital of a certain number of malaria carriers, and it is from these carriers that it has been feared malaria might be spread in regions where it no longer occurs, Dr. Williams explained.

He does not believe this is at all likely to happen, because the conditions under which we now live are so different from what they were when malaria was prevalent from Canada to the Gulf. Better housing, nearly universal use of screens, draining, and generally improved health and increased resistance of the people all tend to protect them from attacks of malaria. Even those who do get malaria seldom die of it nowadays, because their resistance is so much better, he pointed out.

The development of automobile travel during the last ten or twelve years has resulted in great numbers of southern people going north for the summer. Many of them are malaria carriers, yet they have not spread the disease in regions now free of it. Dr. Williams stated that in view of this it was not

likely to be spread by the relatively few paretic patients who are malaria carriers.

Some of the alarm over the situation was occasioned, he felt, by the fact that at the same time as the discharge of the first patients treated with malaria, natural conditions in the shape of hurricanes, tornadoes, rains and subsequent drought had upset the living conditions of large sections of the population and also of the mosquitoes in regions recently freed from malaria. A rise in the number of malaria cases followed, and was by some related to the new treatment for paresis. This is unjustified, in Dr. Williams' opinion.

*Science News Letter, June 25, 1932*

## ANTHROPOLOGY

## Ancestors of Eskimos Found Minnesota Lake Bed Varves

**D**ISCOVERY in Minnesota of an ancestor of the Eskimos has been announced in *Science* by Dr. A. E. Jenks, professor of anthropology at the University of Minnesota.

The skeleton, which offers a new problem for scientists who are trying to find out how long men have inhabited America, was found in the silted depths of an extinct lake, in Ottertail County. The human bones lay twelve feet beneath layered silt, formed at the end of the glacial age. In that remote time, as the ice sheet retreated north, the silt flowed into and filled various lakes in this part of Minnesota. The period when this occurred, according to latest geological estimate, would be 18,000 or 20,000 years ago.

Examining the skeleton of the "Minnesota Man," Dr. Jenks pronounces it that of a youth under twenty years of age. The youth was a primitive creature, who, Dr. Jenks says, "must have been of an American ancestral type." He had markedly protruding jaws, and unusually large teeth. The nose had primitive, even ape-like characteristics, described by the anthropologist in the words:

"The nasal aperture has distinctly simian sill and borders."

From the present stage of measurements and reconstruction, Dr. Jenks finds that the man revealed is more akin to Eskimo than Indian in physical type.

With the skeleton lay a crude dagger of antler, and a large pendant of shell. Each has a hole for a leash, by which the youth fastened the articles to his person.

*Science News Letter, June 25, 1932*

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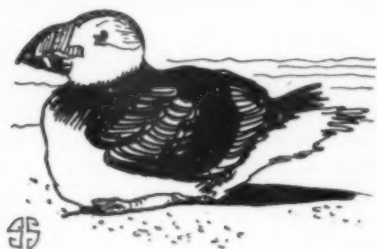
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Puffin

**WE** LOOK for bright harlequin birds in the branches of tropical trees: parrots and macaws and toucans and trogons. Our northern woods have nothing like them. But northern waters have. Rocky shores overlooking the chillier seas all the way around the world are always festooned with rows and rows of strikingly marked birds. As a rule they do not go in for color contrasts, but achieve much the same effects by striking patterns in blacks and browns and whites, sometimes with a decorative touch or two of bright color on beak or head.

The puffin furnishes a striking example. So strong is the suggestion of the tropics that clings about this little bird of the northern shores that sailor-folk the world over have given it the nickname of "sea parrot." Their habits are all different, but their trick of standing upright on their toes, so stiffly that they seem to be standing on their tails, of walking in comic dignity on imaginary errands of preternaturally grave import, of sticking their funny stubs of tails up over their backs when they swim, all conjure up in the mind of the watcher the same reactions that come from observing the equally solemn, equally comic antics of parrots.

Puffins must strike everybody in much the same way. Everybody agrees that "puffin" is the right name for a puffin, just as "muffin" is the right name for a muffin. "Tammie-Norie" is an affectionate nickname that may mean something special in the particular Celtic corner where it originated, but probably doesn't. But the best of all is the Latin name Linnaeus used: *Fratercula arctica*—"little brother of the North." Therein the great Carolus proved himself a worthy kinsman of St. Francis.

*Science News Letter, June 25, 1932*

## ENGINEERING

## Tests Show Effect of Crowds On Grandstand Framework

**T**ESTS upon a steel apparatus, similar in principle to the old-fashioned lawnspring, have shown for the first time how strong a grandstand must be to withstand horizontal forces such as those produced by a crowd of rabid baseball fans. Failures in grandstands occupied by baseball spectators and other sports crowds have resulted in both death and injury, and recent structures have been built without the benefit of reliable data.

Grandstands constructed to take care of a horizontal force of 24 pounds per linear foot of seats or 13 pounds per square foot of stand are held to be well within the limit of safety. These forces are considered applied to the structures supporting the seats at about the level of the seats and in a direction parallel to them.

### Cheers Strain Stands

Previous investigations have shown that great stresses are produced by sports crowds which at times during a contest cheer or sway in surprising unison. When Babe Ruth slams one against the centerfield fence and the roaring fans rise up as one man, the stands should be able to hold up against a force of nine pounds per linear foot of seats or five pounds per square foot of stand to be amply secure. In this instance the forces are applied to the supporting structures in a direction at right angles to the rows of seats.

The tests to obtain these results were conducted in Wayne, Pa., by the Wayne Iron Works in cooperation with the American Standards Association. They were expected to show what would be the maximum forces a grandstand would be expected to meet.

### Men and Model Used

In making the tests, a steel platform six feet square was used. The platform was suspended from overhead beams by rods attached to each corner. It could swing in one direction only. Upon the platform was erected a standard three-row portable steel grandstand four feet long. A large adjustable screw, placed near one end of the platform, controlled the amplitude of the platform's swing.

The stand was occupied by men who were urged to exert their full strength in unison in producing the maximum possible horizontal force in a direction away from the screw. Measurement of the displacement of parts of the apparatus, and mathematical computation resulted in the desired figures.

More lateral force was found to be developed by men in a sitting position than when standing. Greater forces were produced by three men than by nine, a capacity number for the small grandstand used in the experiments. The tests, conducted at the instigation of the Pennsylvania Department of Labor and Industry, included those in which the men were standing or sitting, holding or not holding with their hands, and suddenly rising and sitting down again.

*Science News Letter, June 25, 1932*

Children gain weight faster in autumn and winter, and gain height chiefly in spring and early summer.

Prof. Robert West, of the University of Wisconsin says: "About 85 per cent. of the 1,000,000 stutterers and other speech defectives in the public schools of the United States could have their speech difficulties corrected in school."



The Science Service radio address next week will be on the subject,

**THIS YEAR'S ECLIPSE OF THE SUN**

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# • First Glances at New Books

## Medicine

**CANCER: WHAT EVERYONE SHOULD KNOW ABOUT IT**—James A. Tobey—*Knopf*, 313 p., \$3. This book for the layman contains much sound information on a subject of almost universal interest. The section on false cancer cures is particularly good. However, the book is written on a note of high optimism, particularly as regards the possibility of curing cancer when it is diagnosed in early stages, with which many physicians and cancer authorities will not entirely agree. The author is not a physician but a Doctor of Public Health. He has, however, had the assistance and criticism of many eminent cancer authorities in writing this book, which carries an introduction by Dr. Joseph Colt Bloodgood of Johns Hopkins University.

*Science News Letter, June 25, 1932*

## Hygiene

**THE SEXUAL SIDE OF MARRIAGE**—M. J. Exner—*Norton*, 252 p., \$2.50. This book for the layman has the endorsement of leading authorities in the fields of medicine and health, social hygiene, psychology and education. It is a clearly written, frank discussion of the subject, giving reasons for sexual maladjustment and concrete advice on how to make a success of marriage.

*Science News Letter, June 25, 1932*

## Ichthyology

**SILVER**—R. L. Haig-Brown—*Macmillan*, 96 p., \$1.50. The biography of a magnificent Atlantic salmon, written by a fisherman who knows how to love fish as well as how to catch them.

*Science News Letter, June 25, 1932*

## Chronology

**WHAT TIME IS IT?**—M. Ilin—*Lippincott*, 132 p., \$1.50. Children will delight in this story of clocks which tells how man through countless centuries learned to measure the hours and minutes. The author is the young Russian engineer who wrote "New Russia's Primer."

*Science News Letter, June 25, 1932*

## Nutrition

**ECONOMICS OF FOOD CONSUMPTION**—Edith Hawley—*McGraw-Hill*, 335 p., \$3. Facts and figures about food are presented in a remarkably interesting way in this book, which tells about food habits and costs at home and abroad, and costs and methods of retailing

foods. The home economist, whether she be teacher, institutional worker or plain housewife, will be particularly interested in Miss Hawley's book.

*Science News Letter, June 25, 1932*

## Ethnology

**DRESS, DRINKS, AND DRUMS**—Ernest Crawley—*Methuen, London*, 274 p., 12s. 6d. Three of the late Mr. Crawley's papers have been assembled by the editor, Theodore Besterman, for this volume. The subtitle is "Further Studies of Savages and Sex." The papers contain a great many observations on three important factors in human society, shedding light on origins and backgrounds. The British ethnologist held some interesting theories, as, for example, that man's clothing began as pockets, without a suit. That is to say, the waist-string he assumed as the point of departure for the evolution of dress, the string serving as a "continuous pocket" for carrying weapons and other handy articles.

*Science News Letter, June 25, 1932*

## Botany

**RECENT ADVANCES IN BOTANY**—E. C. Barton-Wright—*Blakiston*, 287 p., \$4. The latest addition to this useful series of "Recent Advances" books contains chapters on plant structure, palaeobotany, the species problem, fungi, algae and virus diseases of plants.

*Science News Letter, June 25, 1932*

## Physics-Radio

**RADIO AND ELECTRONIC DICTIONARY**—Comp. by Harold P. Manly—*Fredrick J. Drake & Co.*, \$2.50. A reference book which will prove valuable to anyone working in the many industries and technologies that are served by the electron tube.

*Science News Letter, June 25, 1932*

## Agriculture

**AGRICULTURE: GENERAL STATISTICS: SUMMARY FOR THE UNITED STATES 1929 AND 1930**—Bureau of the Census—*Government Printing Office*, 111 p., 15c. A great mass of statistical information on American agriculture, compacted into tabular form.

*Science News Letter, June 25, 1932*

## Geography

**THE PIONEER FRINGE**—Isaiah Bowman—*American Geographical Society*, 361 p., \$4. Every continent has its pioneer fringe where luck-hunters are experimenting with untamed land. "Pioneering is an acute question of national magnitude," writes Dr. Bowman, "not only because men have gone to the frontier but also because they are now going in large numbers." There is no handy rule to pioneering, Dr. Bowman says plainly, but a "science of settlement" can be, and is being, developed. This science of settlement can analyze causes of failure and success, and can show pioneers how to profit by experience of their fellows. Following analysis of the problem, the geographer presents chapters on seven different pioneer regions of the world.

*Science News Letter, June 25, 1932*

## Marine Engineering

**SEVENTY FATHOMS DEEP**—David Scott—*Henry Holt*, 275 p., \$3. This is the story of the Italian salvage ship *Artiglio* that went hunting for drowned ships only to suffer finally the same fate.

*Science News Letter, June 25, 1932*

## History of Science

**THE LAST CRUISE OF THE CARNEGIE**—J. Harland Paul—*Williams and Wilkins*, 331 p., \$5. On the long, tragic heroic list of ships that sailed, away and never came back, the *Carnegie*, non-magnetic survey yacht of the Carnegie institution of Washington, holds a melancholy but honorable place. Dr. Paul, who was ship's doctor as well as scientific observer, here tells of the events of her seventh and last world cruise, and of her accidental destruction in Apia harbor, with the death of her commander, Capt. Percy Ault.

*Science News Letter, June 25, 1932*

## Education

**THE ACCEPTABLE USES OF ACHIEVEMENT TESTS**—Paul R. Mort and Arthur I. Gates—*Teachers College, Columbia University*, 85 p., \$1. A manual for the use of teachers and others doing educational testing.

*Science News Letter, June 25, 1932*

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